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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,219	09/10/2003	Andre Jeutter	2001P17947WOUS	5692

7590 07/11/2006

SIEMENS CORPORATION
INTELLECTUAL PROPERTY DEPT.
170 WOOD AVENUE SOUTH
ISELIN, NJ 08830

EXAMINER

WONG, EDNA

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 07/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,219

Applicant(s)

JEUTTER ET AL.

Examiner

Edna Wong

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date September 10, 2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Specification

The disclosure is objected to because of the following informalities:

page 2, line 5, "claim 1" should be deleted because it is improper for the specification to refer to the claims.

page 2, line 25, "claim 1" should be deleted because it is improper for the specification to refer to the claims.

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

lines 9-10, "particles of the layer" lacks antecedent basis.

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line 10, it appears that the "particles" are the same as those recited in claim 1, line 9. However, it is unclear if they are. If they are, then it is suggested that the word -- the -- be inserted after the word "of".

Claim 4

line 2, it appears that the "depositing layers" are the same as the applying at least one layer recited in claim 5. However, it is unclear if they are. If they are not, then what is the relationship between the depositing layers and applied layers?

Claim 5

line 2, the phrase "specifically below 100°C" is indefinite.

Claim 8

lines 2-3, "the near-surface region of the hole" lacks antecedent basis.

Claim 10

line 2, the phrase "specifically a ceramic heat insulating layer, or a metal" is indefinite.

lines 2-3, the phrase "specifically a MCrAlY coating" is indefinite.

line 3, "(M= Fe, Co, Ni)" is indefinite.

Claim 12

line 2, the words "wax-like" is indefinite.

Claim 13

line 5, "particles of the layer" lacks antecedent basis.

line 6, it appears that the "particles" are the same as those recited in claim 13, line 5. However, it is unclear if they are. If they are, then it is suggested that the word -- the -- be inserted after the word "of".

Claim 14

line 4, "the turbine component" lacks antecedent basis.

line 6, "particles of the layer" lacks antecedent basis.

line 7, it appears that the "particles" are the same as those recited in claim 14, line 6. However, it is unclear if they are. If they are, then it is suggested that the word -- the -- be inserted after the word "of".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

I. Claims **1-5 and 9-12** are rejected under 35 U.S.C. 102(b) as being anticipated by **Kang et al.** (US Patent No. 5,800,695).

Kang teaches a method for coating a substrate having at least one hole comprising:

(a) covering the at least one hole **4** (= cooling holes) with a plug **5** (= a maskant) [col. 2, lines 17-42; and Figs. 4 and 5];

(b) applying at least one layer (= a protective coating) to a surface of the substrate via a low-temperature coating process (= an electroplating process) [col. 2, lines 43-52]]; and

(c) irradiating a surface of the at least one layer (= diffusion heat treatment) to improve adhesion of particles of the layer to ensure homogenization of particles (= from the diffusion) in the near-surface region of the layer (*inherent*) [col. 3, lines 1-11].

The substrate is a turbine blade (col. 2, lines 12-16; and Fig. 1).

During irradiation, a region below the surface of the layer is at least partially fused (*inherent*) [col. 3, lines 1-11].

An electrochemical method for depositing layers is used as the low-temperature

coating process (= an electroplating process) [col. 2, lines 43-52]].

The temperature for the low-temperature coating process is below 250°C, specifically below 100°C (= 180°F) [col. 3, lines 21-22].

The plug is removed by evaporation (= a maskant which will volatilize on the application of high temperatures) [col. 2, lines 53-56].

The layer is a ceramic, specifically a ceramic heat insulating layer, or a metal, specifically a MCrAlY coating (M = Fe, Co, Ni) [= nickel and cobalt based superalloys] (col. 1, lines 5-18).

The hole, of which there is at least one, is a film cooling hole or an impingement cooling hole (= cooling holes) [col. 2, lines 12-16].

The plug is of a *wax-like* material (= polypropylene and a polyurethane oligomer mixture) [col. 2, lines 33-42].

Since Kang teaches all of the limitations recited in the instant claims, the reference is deemed to be anticipatory.

II. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by **Kang et al.** (US Patent No. 5,800,695).

Kang teaches a method for coating a turbine component (col. 2, lines 12-16; and Fig. 1) having at least one hole, comprising:

(a) covering the at least one hole 4 (= cooling holes) with a plug 5 (= a maskant) [col. 2, lines 17-42; and Figs. 4 and 5];

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(b) applying at least one layer (= a protective coating) to a surface of the turbine component via a low-temperature coating process (= an electroplating process) [col. 2, lines 43-52]]; and

(c) irradiating a surface of the at least one layer (= diffusion heat treatment) to improve adhesion of particles of the layer and to ensure homogenization of particles (= from the diffusion) in the near-surface region of the layer (*inherent*) [col. 3, lines 1-11].

Since Kang teaches all of the limitations recited in the instant claims, the reference is deemed to be anticipatory.

III. Claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by **Kang et al.** (US Patent No. 5,800,695).

Kang teaches a method for recoating a substrate which has already been used (MPEP § 2111.02(II)), and having at least one hole, comprising:

(a) covering the at least one hole 4 (= cooling holes) with a plug 5 (= a maskant) [col. 2, lines 17-42; and Figs. 4 and 5];

(b) applying at least one layer (= a protective coating) to a surface of the turbine component via a low-temperature coating process (= an electroplating process) [col. 2, lines 43-52]]; and

(c) irradiating a surface of the at least one layer (= diffusion heat treatment) to improve adhesion of particles of the layer and to ensure homogenization of particles (= from the diffusion) in the near-surface region of the layer (*inherent*) [col. 3, lines 1-11].

Since Kang teaches all of the limitations recited in the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang et al. (US Patent No. 5,800,695) as applied to claims 1-5 and 9-12 above, and further in view of JP 1-100302 ('302).

Kang is as applied above and incorporated herein.

The method of Kang differs from the instant invention because Kang does not disclose the following:

- a. Wherein irradiation of the surface is performed using pulsed electron irradiation, as recited in claim 6.
- b. Wherein irradiation of the surface is performed using a laser treatment, as recited in claim 7.

Kang teaches that after removal of the maskant the component may then be processed as is common in the art, including diffusion heat treatment to diffuse the protective coating, e.g., platinum, into the component's surface (col. 3, lines 1-11).

Like Kang, JP '302 teaches a coated turbine blade. JP '302 teaches that irradiating the hard substance (= a hard particle in an alloy like Ni-Cr-Fe alloy) and the blade mother metal with a high energy beam like a laser or an electron beam to melt and fuse both the hard substance and blade mother on the surface of the blade, thereby forming a surface-hardened layer with excellent adhesion (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the heat treatment described by Kang with wherein irradiation of the surface is performed using pulsed electron irradiation; and wherein irradiation of the surface is performed using a laser treatment because irradiating a Ni-Cr-Fe alloy with a pulsed electron irradiation and a laser treatment is a common process in the art that would have formed a surface-hardened layer with excellent adhesion as taught by JP '302 (abstract).

c. Wherein during or at the end of irradiation of the surface, the plug is removed from the near-surface region of the hole, as recited in claim 8.

Kang teaches that after removal of the maskant the component may then be processed as is common in the art, including diffusion heat treatment to diffuse the protective coating, e.g., platinum, into the component's surface (col. 3, lines 1-11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the heat treatment described by Kang with wherein during or at the end of irradiation of the surface, the plug is removed from the

near-surface region of the hole because the selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results. See *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946).

Citations

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Venkataramani et al. (US Patent No. 6,335,078 B2) is cited to teaches a maskant comprising organic fillers such as paraffins or other waxes (col. 7, lines 42-48).

EP 1,076,107 is cited to teach reapplication of coatings by using a process of plugging holes of a gas turbine component (col. 10, claim 18; and cols. 10-11; claim 19).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

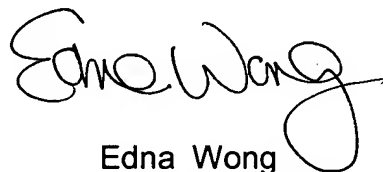
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Edna Wong", with a stylized, looping flourish at the end.

Edna Wong
Primary Examiner
Art Unit 1753

EW
June 27, 2006